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EXAMINER	
SILVER, DAVID	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/733,788	YUNT ET AL.	
	Examiner	Art Unit	
	David Silver	2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 July 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-69* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-69* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. The Instant Office Action is made in response to a Request for Continued Examination filed 7/9/2007.

2. Claims 1-69 are currently pending in Instant Application.

Priority

3. Priority is not claimed.

Response to Arguments

Response: 35 U.S.C. § 112

4. **Background:**

Claims 1-24 stand rejected under 35 U.S.C. 112, second paragraph, as being **indefinite** for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. As per claim 1, the amended portion presents an ambiguity which renders the claim indefinite. Specifically, it is unclear as to whether the each of the blocks comprises a plurality of execution methods, or whether the one or more blocks comprise a plurality of execution methods. In the latter case, two blocks can have a single method each. However, in the former interpretation the same may not be true.

5. **Applicants argue:**

> Applicants have amended claim 1 to include "*where at least one of the one or more blocks includes a plurality of execution methods*" to address the 35 U.S.C. §112, second paragraph, rejection. Applicants believe that amended claim 1, and claims 2-24 depending therefrom, overcome the 35 U.S.C. §112, second paragraph, rejection. Reconsideration and allowance of claims 1-24 is respectfully requested.

6. **Examiner Response:**

Applicants' amendments overcome the 35 U.S.C. § 112 rejections. Rejections **withdrawn**.

Response: 35 U.S.C. § 102 / § 103

7. Applicants' arguments have been fully considered but are not persuasive and are respectfully traversed. However, the issue is **moot** in view of the new grounds of rejection presented below.

Claim Rejections - 35 U.S.C. § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:
The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 48-53 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

As per claim 48, the following claim limitations do not enabled one of ordinary skill in the art to make and use the invention without undue experimentation: what does the term "computer-based model" mean? Is this a model of a computer, or a model being executed by a computer?

How is a domain a text-based environment, a state based block diagram, or a data-flow diagram. A domain is the set of all input values to the function. The claim limitations and therefore the claims are not enabled.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1-3, 5-9, 17-22, 24, 25-27, 29-33, and 41-46, 48-69 are rejected under 35 U.S.C. 103(a) as being unpatentable over MathWorks' Simulink "Dynamic System Simulation for MATLAB" " ", 1997 ("MathWorks"), and further in view of Official Notice taken.

As per claim 1, MathWorks discloses: In a modeling and execution environment, a method comprising the

steps of:

providing a graphical debugger interfaced with a model view of a model being executed, said model comprising one or more blocks where at least one of the **(12-3; 9-37; 9-42 "The block can integrate using these methods: ...")**, said graphical debugger having debug information related to the execution of said model **(12-3)**, said debug information indicating at least one of the order of the execution of said plurality of execution methods for said at least one of the one or more blocks **(12-16, 12-16 to 12-19, 12-5)** and a start time or a stop time of at least one of said plurality of execution methods that are executed during the execution of said model **(start time ... 12-3 last para; 2-12; stop time ... 4-2 "An important advantage is that you can perform certain operations interactively while a simulation is running: You can modify many simulation parameters, including the stop time, the solver, and the maximum step size.")**; and outputting said debug information to a user, said debug information allowing the user to determine proper or improper operation for at least a subset of said plurality of execution methods that are executed during the execution of said model.

MathWorks implies but does not make explicit that "one or more blocks includes a plurality of execution methods" **(12-3; 9-37; 9-42 "The block can integrate using these methods: ...")**.

Official Notice is taken with respect to this feature.

The legal basis for the 35 U.S.C. § 103 rejection is detailed in MPEP 2144.04.VI.B titled "Duplication of Parts", wherein it is described that mere duplication of parts has no patentable significance unless a new and unexpected result is produced. In this instance, merely duplicating the number of methods that each block contains does not produce a new and unexpected result.

Motivation to do so would have been to create a more compact design, which is also not a patentably significant feature. See MPEP 2144.04.V.B.

As per claim 2, Mathwork discloses: The method of claim 1, comprising the further steps of:

wrapping data generated by the execution of said model in an object, said wrapping encapsulating said execution-generated data in said object **(11-3: How to Specify a Path for**

a Simulink Object, 9-4 "To File", 9-61, -144, -145); and

exposing said data to said debugger via at least one interface to said object **(9-92 the exposure occurs when the debugger reads the information into the memory "From File", 9-61, -144, -145)**.

As per claim 3, MathWorks discloses: The method of claim 2, comprising the further step of: altering said data via said interface **(-131, 4-2: "An important advantage is that...")**.

As per claim 5, MathWorks discloses: The method of claim 1, comprising the further steps of:

processing said model to create compiled model information **(1-10 bullet 2, 1-12, 8-2: "C language S-functions are compiled as MEX-files using the mex utility described in the Application Program Interface Guide. As with other MEX-files, they are dynamically linked into MATLAB when needed.)**; and

programmatically generating executable code from said compiled model information, said code including an interface to said debugger **(1-12: linked, 8-36 first 3 para, 8-42: cg_sfun.h is included if the file is being used in conjunction with the Simulink Real-Time Workshop to produce a stand-alone or real-time executable.)**.

As per claim 7, MathWorks discloses: The method of claim 6, comprising the further steps of:

saving an execution history for said executable code **(MathWorks' "Target Language Compiler Reference Guide" ("TLC") futher expands on this inherent feature on page A-20 "This history is saved in the real-work vector.")**; and

outputting the execution history by at least one of saving it in a permanent memory location **(this feature is inherent)**, displaying it for a user **(the GUI displays the results to the users, furthermore, the data stored to the files is viewable by users)**, or sending it to a printing device to be printed **(RTW: 4-9, MathWorks: 3-26)**.

As per claim 8, MathWorks discloses: The method of claim 6 wherein said debugger is started after compilation and before the execution of said code **(this feature is inherent within the disclosure. Specifically, the debugger must have something to debug and therefore debugs after the**

compilation has finished. Furthermore, the debugger starts the execution of the code and is therefore started before the execution of the code.).

As per claim 9, MathWorks discloses: The method of claim 1, comprising the further step of:

indicating graphically using said debugger a plurality of blocks that are part of an algebraic loop when the executing model is processing the algebraic loop **(7-10, 12-14, 12-18, 4-20 first para).**

As per claim 17, MathWorks discloses: The method of claim 1, comprising the further step of:

communicating with an external mode simulation with said debugger **(8-114: "SS_SIMMODE_EXTERNAL — External mode simulation").**

As per claim 18, MathWorks discloses: The method of claim I, comprising the further step of:

saving a snapshot of data relating to model execution during execution of said model, said snapshot data sufficient to enable the subsequent restarting of the execution of said model using said snapshot data **(4-16: "You can also save the final states for a simulation and apply them to another simulation. This feature might be useful when you want to save a steady-state solution and restart the simulation at that known state.").**

As per claim 19, MathWorks discloses: The method of claim 18 wherein said snapshot data is saved programmatically at least one or more of a regular interval or based on a user-defined parameter **(4-16: "You can also save the final states for a simulation and apply them to another simulation. This feature might be useful when you want to save a steady-state solution and restart the simulation at that known state." The user defined parameter is whenever the user chooses to do so manually.).**

As per claim 20, MathWorks discloses: The method of claim 19, comprising the further step of: loading a saved snapshot into said debugger; and

executing a saved model based on said saved snapshot, said saved model executing from a point in time said snapshot was saved using information from said saved snapshot **(4-16: "You can also save the final states for a simulation and apply them to another simulation. This feature might be**

useful when you want to save a steady-state solution and restart the simulation at that known state.").

As per claim 21, MathWorks discloses: The method of claim 18, comprising the further step of: displaying graphically to a user the saved snapshot data **(this feature is inherent when the snapshot is restarted).**

As per claim 22, MathWorks discloses: The method of claim 21, comprising the further step of

displaying graphically to a user at least one additional set of snapshot data without restarting the execution of said model **(This feature is inherent, it is the filename of the snapshot.).**

As per claim 24, MathWorks discloses: The method of claim 18, comprising the further step of:

saving a difference between a set of current model execution data and a saved snapshot **(this feature is inherent. Specifically, when the simulation is restarted from a snapshot point and later saved it will be saved with the difference incorporated within the new snapshot.).**

As per claim(s) 25-27, 29-33, 41-46, note the rejection of claim(s) 1-3, 5-9, 17-22, 24 above. The Instant Claim(s) is/are functionally equivalent to the above-rejected claim(s) and is/are therefore rejected under same prior-art teachings.

As per claim 48, note the rejection of claims 1-2 above. The Instant Claim recites substantially same limitations as the above-rejected claims and therefore rejected under same prior-art teachings, but for: identifying a first execution method operating in a first domain of a computer- based modeling application that executes a computer-based model, where the first domain is one of a text-based environment, a time-based block diagram, a state based block diagram, or a data-flow diagram **(B-2 model file ... text-based environment);**

identifying a second execution method operating in a second domain, where the second domain differs from the first domain **(1-6: GUI-based tools for designing simulating and analyzing systems).**

As per claims 49-50, note the rejection of claim 1-2 above. The Instant Claims recite substantially same

limitations as the above-rejected claim and therefore rejected under same prior-art teachings.

MathWorks discloses: 51. The method of claim 48, further comprising:

displaying a hierarchy containing information about the first execution method or the second execution method, the hierarchy allowing a user to identify relationships between the first execution method and the second execution method, the first execution method and another execution method, or the second execution method and the another execution method **(1-3: "You can view the system at a high-level, then double-click on blocks to go down through the levels to see increasing levels of model detail.")**.

MathWorks discloses: 53. The method of claim 48, further comprising: identifying the first execution method or the second execution method using a visual indicator to identify when the first execution method or the second execution method is executing **(12-5)**.

As per claim 52, note the rejection of claims 1-2, 51, 53 above. The Instant Claim recites substantially same limitations as the above-rejected claims and therefore rejected under same prior-art teachings.

As per claim 54, note the rejection of claim 1 above. The Instant Claim recites substantially same limitations as the above-rejected claim and therefore rejected under same prior-art teachings.

55. (previously presented) A method, comprising:

identifying a first root method comprising one or more child methods, the first root method related to a graphical modeling application;

identifying a second root method related to the graphical modeling application;

running the first root method and the second root method in a graphical debugger to obtain information about the operation of the first root method or the second root method; and

displaying a debugging result to a destination, the debugging result comprising visual identifiers related to the operation of the first root method, the one or more child methods or the second root method, error information about the first root method, the one or more child methods or the second root method, an execution result for the first root method, the one or more child methods or the second root

method, or status information related to the first root method, the one or more child methods or the second root method.

As per claim 56, note the rejection of claim 55 above. The Instant Claim recites substantially same limitations as the above-rejected claim and therefore rejected under same prior-art teachings.

MathWorks discloses: 57. The method of claim 56, wherein the displaying an indicator further comprises:

displaying a first symbol when the status is related to the first root method; and displaying a second symbol when the status is related to the one or more child methods or the second root method **(3-19; 6-14; -118; 10-15; A-7)**.

MathWorks discloses: 58. The method of claim 56, wherein the displaying an indicator further comprises:

displaying a first color to represent a first status related to the first root method; and displaying a second color to represent a second status related to one of the one or more child methods or the second root method **(3-19; 6-14; -118; 10-15; A-7)**.

MathWorks discloses: 59. The method of claim 56, further comprising:

displaying the hierarchy in a first region related to one or more display devices; and displaying a graphical diagram related to the first root method or the second root method in a second region related to the one or more display devices, the graphical diagram synchronized with information displayed in the first region **(3-19; 6-14; -118; 10-15; A-7)**.

As per claim 60-66, note the rejection of claims 50-51, 57-60 above. The Instant Claim recites substantially same limitations as the above-rejected claims and therefore rejected under same prior-art teachings.

MathWorks discloses: 66. The method of claim 65, wherein the first indicator or the second indicator are a color, a pointer, a symbol, a font, or a border **(A-7)**.

MathWorks discloses: 67. The method of claim 64, wherein the first display area comprises a window that displays information about the graphical icon or the graphical icon debugging information **(2-6; 2-7; 2-11; 3-49)**.

MathWorks discloses: 68. The method of claim 67, wherein the window comprises a visual indicator to

connect the window to the graphical icon or to the graphical icon debugging information **(2-6; 2-7; 2-11; 3-49)**.

MathWorks discloses: 69. The method of claim 64, further comprising: displaying an execution list in the hierarchy, the execution list related to the root method or the one or more child methods **(3-49)**.

10. Claim 4, 10-16, 23, 28, 34-40, 47 rejected under 35 U.S.C. 103(a) as being unpatentable over MathWorks's Simulink, 1997 ("MathWorks") as applied to claim 1 above, and further in view of Fenlason's "GNU gprof" ("GNU gprof") (1998).

As per claim 4, MathWorks discloses all limitations of claim 1, and that the execution-generated data is at least one of state information **(4-16 "Loading and Saving States", -131, A-22: signal generators, etc, 8-65)**, block inputs, block outputs **(3-15, 8-46 "In general, block inputs and outputs are written", 9-80)**, solver data **(4-4, 4-6, 4-16)**, signal values for said model **(-119, 8-124)**. MathWorks however does not explicitly disclose profiling data. GNU gprof however discloses an analogous application profiling system having the said feature **(page 14, "The primary line of this entry describes the total time spent directly in the functions of the cycle.")**. It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to combine the references in order to time the execution of a program and routines of the program in order to identify which portions of the program cause a bottleneck and resolve them.

As per claim 10, MathWorks discloses: The method of claim 1, comprising the further step of: saving a record of a unique execution method invocation, **(1-3: "After you define a model, you can simulate it, using a choice of integration methods, either from the Simulink menus or by entering commands in MATLAB's command window.")**. MathWorks however does not substantially disclose said execution unique execution method invocation comprising information related to the execution of one of said plurality of execution methods that belongs to at least one of said one or more blocks, a system, or a model instance in an execution list of called execution methods. GNU gprof however discloses an analogous application profiling system having the said feature **(page 11: Call Graph)**.

As per claim 11, MathWorks discloses all limitations of claim 10. MathWorks does not expressly disclose that the unique execution method invocation record comprises information about child records of a subset of said plurality of execution executed inside said unique execution method invocation record. GNU gprof however discloses the said features **(page 12 section titled "children")**. It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to combine the references in order to time the execution of a program and routines of the program in order to identify which portions of the program cause a bottleneck and resolve them.

As per claim 12, MathWorks discloses all limitations of claim 11. MathWorks however does not expressly disclose that a link is provided from said unique execution method invocation record to said child record. GNU gprof however discloses an analogous system having the said feature **(page 6 section titled "--file-ordering map_file": "The `--file-ordering' option causes gprof to print a suggested .o link line ordering for the program based on profiling data.")**. It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to combine the references in order to time the execution of a program and routines of the program in order to identify which portions of the program cause a bottleneck and resolve them.

As per claim 13, MathWorks discloses all limitations of claim 10. MathWorks does not however expressly disclose that the said unique execution method invocation record comprises information regarding at least one parent record of one or more of the plurality of execution methods in which said unique execution method invocation is executed. GNU gprof however discloses an analogous system having the said feature **(page 11: Call Graph)**. It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to combine the references in order to time the execution of a program and routines of the program in order to identify which portions of the program cause a bottleneck and resolve them.

As per claim 14, MathWorks discloses all limitations of claim 13. MathWorks however does not expressly disclose a link is provided from said unique execution method invocation record to said parent record. GNU gprof however discloses an analogous system having the said feature **(page 6 section titled "--**

file-ordering map_file": "The `--file-ordering' option causes gprof to print a suggested .o link line ordering for the program, page 11: Call Graph). It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to combine the references in order to time the execution of a program and routines of the program in order to identify which portions of the program cause a bottleneck and resolve them.

As per claim 15, MathWorks discloses all limitations of claim 10. MathWorks however does not expressly disclose that the said unique execution method invocation record comprises data about a state of the method invocation. GNU gprof however discloses an analogous system having the said feature **(page 11: Call Graph - called column)**.

As per claim 16, MathWorks discloses all limitations of claim 15. MathWorks however does not expressly disclose that the said state indicates the method invocation is at one of the states of entering, entered, exiting and exited **(page 11: Call Graph)**.

As per claim 23, MathWorks discloses all limitations of claim 22. MathWorks however does not expressly disclose that the said set of snapshot data is displayed in order of decreasing time. This is merely a design choice. Microsoft Windows allows for sort of descending or ascending names, file types, sizes, creation and modification dates. This is done for faster searching and identification of the user-required information.

As per claim(s) 28, 34-40, and 47, note the rejection of claim(s) 4, 10-16, and 23 above. The Instant Claim(s) is/are functionally equivalent to the above-rejected claim(s) and is/are therefore rejected under same prior-art teachings.

Conclusion

All claims are rejected.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Silver whose telephone number is (571) 272-8634. The examiner can normally be reached on Monday thru Friday, 10am to 6:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah can be reached on 571-272-2279. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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/ds/

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SUPERVISORY PATENT EXAMINER